



Dart Hawkesbury
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

5090652

D212-664-107
Job Sheet 158490



Part No: D212-664-107

Job Qty: 1 ea

Part Name: Fwd Crosstube - Low Standard



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 9/30/17

Job Tracking No:

Due Date: 11/15/17

Created By: Mario Poulin

Type: Stock

Description:

Note: DWG REV C IPP Rev:A New Issue 07.09.12 EC verified by: JLM IPP Rev:B ECN 1100 08-01-11 DD verified by: EC IPP Rev:C Ecn 1121 08-02-25 DD Verified by:ec IPP Rev:D 10.05.27 added pick kit DD verf:EC IPP Rev:E 11.10.17 added SEQ 215 DD verf:EC IPP REV:F 11.11.03 as per chg003 DD verf:EC IPP REV:G 14.05.28 AS PER ECN14-570 DD VERF ;JLM

Ship Via:

Bill of Materials

Part/Part Name	Part Note	Serial No	Quantity	Location
D212-664-107 Fwd Crosstube - Low Standard	DWG REV C IPP Rev:A New Issue 07.09.12 EC verified by: JLM IPP Rev:B ECN 1100 08-01-11 DD verified by: EC IPP Rev:C Ecn 1121 08-02-25 DD Verified by:ec IPP Rev:D 10.05.27 added pick kit DD verf:EC IPP Rev:E 11.10.17 added SEQ 215 DD verf:EC IPP REV:F 11.11.03 as per chg003 DD verf:EC IPP REV:G 14.05.28 AS PER ECN14-570 DD VERF ;JLM		0.000	
AN6-35A Bolt			0.000	
AN6-36A Bolt			0.000	
CR3212-4-06 Rivet			0.000	
D212-664-107TRN Crosstube Turning Detail	DWG REV C IPP Rev:A New Issue 08-03-06 DD Verified by:ec IPP Rev B Removed polish 08.04.02 EC verified: DD		0.000	
D2893-1 Support	DWG REV C IPP: C 02.11.26 Reformat; Added P/O KJ IPP D 06.04.19 removed alodine EC IPP Rev:E Added priming as per Rev B 07-04-30 JLM IPP F 08.03.19 Re-format EC verified by: DD IPP Rev:G 08-05-15 add QC14 DD verified by:EC IPP Rev:H 11.08.04 as per dwg rev.C DD verf:EC		0.000	
D3428-1 Placard	DWG REV A IPP: A 05.08.10 New issue KJ/JLM		0.000	
D3595-063-450 Rubber Cushion	DWG REV A IPP Rev:A New Issue 07-08-07 JLM Verified By:		0.000	



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Container No: S090652



Part: D212-664-107

Job No: 158490

Serial No/Batch: S090652

Revision: C/J

Inspector:

Exp Date:

by:JLM

Status: Stock

Part: **D212-664-107 B158490**

Created: 9/30/17 11:43 AM DART.MICHAUD-FEBRILLE.VICTORIA



Serial No: **S000066**

Printed By: Goldston, Justin 10/2/17 10:44 AM

Job Routing

Op No	Operation	Qty	Due Date	Standard		Workcenter/Supplier	
				Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time
90	Start up Operation	1 Ea	11/14/17	0.00	0.00	Start up container	11/1/2018
100	DC	1 pcs	11/14/17	0.00	0.00	DC 21 JUL 27 N/A	

210	Crosstubes	1 pcs	11/14/17	0.00	2.42	Crosstube	NR
230	QC	1 pcs	11/14/17	0.00	0.00	QC14	
240	Crosstubes	1 pcs	11/15/17	0.00	2.42	J111 10-28-18 Tube A2	DAS
250	QC	1 pcs	11/15/17	0.00	0.00	QC5	38
255	Packaging	1 pcs	11/15/17	0.00	0.00	Packaging1	3 st JUL 17 2018
260	QC	1 pcs	11/15/17	0.00	0.00	QC4	Smb
270	Packaging	1 pcs	11/15/17	0.00	0.00	Packaging3	Smb
280	QC21-FG	1 Ea	11/15/17	0.00	0.00	QC21	DAS JUL 27 2018

Part Op 100 - Photocopy bluefile and create labels as per PPP D212-664-107 CHG 004

Descriptions: 210 - *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** 1-Rivet Cuffs as per Dwg D212-664-147. with Sika flex in Between tube & Cuff A/R SIKAFLEX -241/-291 BATCH: _____
 230 - Wrap in plastic bag to protect from scratches
 240 - Assemble as per Dwg D212-664-147 2- Install supports with Proseal 890 per D212-664-147 and QSI 015 3- Install clamps with rubber cushion (ENSURE CLAMPS ARE INSTALL ON TOP SIDE OF CROSSTUBE) as per Dwg D212-664-147. 138848 exp 11/18
 250 - ***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED FOR 72HOURS AS PER DWG.***
 260 - ***VERIFY BY _____ BATCH # TO MATCH W/O _____
 270 - Identify and pack for shipping as per PPP D212-664-107 Location : FG093
 280 - *****LAY DOWN CORSTUBE ON TABLE AND PUT DT10302 PINS IN SADDLE HOLE FACING UP, USE HOLE IN TAPE MESURE TO PUT IN PINS FOR LOCATING CENTER OF CROSSTUBE. *****

Job BOM

Part / Item	Component Name	Quantity	Operation	Special Comments
D212-664-107 B158490		1 Ea (1 ea)	90-Start up Operation	
CR3212-4-06	Rivet	44 Ea (44 ea)	210-Crosstubes	
D2893-1	Support	2 Ea (2 ea)	240-Crosstubes	
D3595-063-450	Rubber Cushion 0.63" Wide X 4.50" Long	4 Ea (4 ea)	240-Crosstubes	
MS21920-25	Clamp	4 Ea (4 ea)	240-Crosstubes	
AN6-35A	Bolt	4 Ea (4 ea)	255-Packaging	
AN6-36A	Bolt	4 Ea (4 ea)	255-Packaging	
D3428-1	Placard	1 Ea (1 ea)	255-Packaging	
MS21042L6	Nut	6 Ea (6 ea)	255-Packaging	
NAS1149D0663J	Washer	18 Ea (18 ea)	255-Packaging	

Job Allocations

Operation	Component Part	Required	Inventory	Allocated	Std Qty
90-Start up Operation	D212-664-107 B158490	1	1	0	0
210-Crosstubes	CR3212-4-06 on old w/o	44	0	0	0
240-Crosstubes	D2893-1 5083028	②	0	0	0
	D3595-063-450 5078312	④	0	0	0
	MS21920-25 5068660	④	0	0	0
255-Packaging	AN6-35A	4	0 5017090	0	0
	AN6-36A	4	0 5017090	0 (M132170)	0
	D3428-1	1	0 5046306	0	0
	MS21042L6	6	0 5041168	0	0
	NAS1149D0663J	18	0 3043782	0	0

Part Specifications

Specifications could not be found.

Work Order Summary

Thursday, September 28, 2017 8:20:49 AM

Page 1 of 2

Criteria : Work Order ID: 158490 Item ID: D212-664-107 Product Family CROSSTUBES
Work Order Start Dates 3/27/2017 to 3/27/2017 11:59:59 PM Work Order Required Dates 4/12/2017 to 4/12/2017 11:59:59 PM

Reference: SCHEDULED/STOCK

Work Order Status Released

Work Order ID	158490	Required Qty	1.0000	Status Code	Released
Item ID	D212-664-107	Accepted Qty	0.0000	Scrap Qty	0.0000
Item Name	Fwd Crosstube - Low Standard				
Current Acct Value	\$3,547.368				
Start Date	3/27/2017	Required Date	4/12/2017	Completed Date	
Standard	** Actual **	** Acct. Value **	** Variance **	** Variance % **	
Direct Costs	Total	Each	Each	Each	Each
Material	\$534.505	\$0.000	\$705.437	\$705.437	100.00%
Labor	\$674.901	\$0.000	\$723.426	\$723.426	100.00%
Outplant	\$95.321	\$0.000	\$252.507	\$252.507	100.00%
Variable Burden	\$0.000	\$0.000	\$0.000	\$0.000	0.00%
Fixed Burden	\$2,026.285	\$0.000	\$1,930.130	\$1,930.130	100.00%
Material Burden	\$0.000	\$0.000	\$0.000	\$0.000	0.00%
** Total **	\$3,331.012	\$0.000	\$3,611.498	\$3,611.498	

Item ID/Item Name	Required Qty	Issue Code	Issue Date	Issued Qty	Cost Amount
PO ID PO Line Nbr PO Receiver Date Domestic Unit Price PO Receipt Qty Domestic Received Amt Certification Standard					
D212-664-107TRN					
Crosstube Turning Detail					
PO Rout Seq ID PO Vendor ID	1.0000	VC-SKY001	7/25/2017	1.0000	\$1,264.570
D36591-5835 4 4/10/2017 8:16:00 AM \$95.3212 1.0000 \$95.321 m137264					
Cuff	2.0000		4/3/2017	2.0000	\$202.160
Total Matl Amts:					\$1,466.730

Invoice Rout Seq ID		Invoice Vendor ID	VC-SKY001		
Invoice ID	Invoice Line Nbr	Invoice Date	Invoice Unit Price	Invoice Qty	Invoice Amt
MWQ31117	4	4/12/2017 10:04:59 AM	95.3211875	1.0000	\$95.321

Work Center CNC Bend 2

Employee ID	Rout Seq ID	Labor Date	Setup Hours	Actual Setup Hours	Labor Hours	Actual Labor Hours	Nbr of WOs	Setup Amount	Labor Amount	Fix Burd Amount	Var Burd Amount	Total Amounts
paul01												
3/30/2017												
120			0.00	0.00	1.46	1.46	1.00	\$0.000	\$27.203	\$89.671	\$0.000	\$116.874
120			2.25	2.25	0.00	0.00	1.00	\$41.775	\$0.000	\$137.708	\$0.000	\$179.484
3/31/2017												
120			0.00	0.00	3.61	3.61	1.00	\$0.000	\$67.142	\$221.325	\$0.000	\$288.467
4/3/2017												

120			0.00	0.00	5.42	5.42	1.00	\$0.000	\$100.732	\$332.052	\$0.000	\$432.784
Total:			2.25	2.25	10.49	10.49	4.00	\$41.775	\$195.076	\$780.756	\$0.000	\$1,017.608

Work Center Crosstubes

Employee ID	Rout Seq ID	Labor Date	Setup Hours	Actual Setup Hours	Labor Hours	Actual Labor Hours	Nbr of WOs	Setup Amount	Labor Amount	Fix Burd Amount	Var Burd Amount	Total Amounts
paul01												
	4/3/2017											
140			0.00	0.00	1.35	1.35	1.00	\$0.000	\$25.071	\$82.642	\$0.000	\$107.713
140			2.37	2.37	0.00	0.00	1.00	\$44.120	\$0.000	\$145.436	\$0.000	\$189.555
4/4/2017												
140			0.00	0.00	4.07	4.07	1.00	\$0.000	\$75.687	\$249.495	\$0.000	\$325.183
SHEL02												
	4/8/2017											
210			0.00	0.00	0.62	0.62	1.00	\$0.000	\$11.587	\$38.196	\$0.000	\$49.783
Total:			2.37	2.37	6.04	6.04	4.00	\$44.120	\$112.345	\$515.769	\$0.000	\$672.234

Work Center SprayPaint

Employee ID	Rout Seq ID	Labor Date	Setup Hours	Actual Setup Hours	Labor Hours	Actual Labor Hours	Nbr of WOs	Setup Amount	Labor Amount	Fix Burd Amount	Var Burd Amount	Total Amounts
SHEL02												
	4/10/2017											
220			0.00	0.00	0.43	0.43	1.00	\$0.000	\$7.947	\$26.197	\$0.000	\$34.144
220			0.00	0.00	0.56	0.56	1.00	\$0.000	\$10.468	\$34.507	\$0.000	\$44.975
Total:			0.00	0.00	0.99	0.99	2.00	\$0.000	\$18.415	\$60.704	\$0.000	\$79.119

Work Order ID 158490***158490***

Page 1

Thursday, March 23, 2017 2:17:30 PM

Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017 Start Qty: 1.00

1

Cust Item ID:

Required Date: 4/12/2017 Req'd Qty: 1.00

1

Customer:

Reference: SCHEDULED/STOCK

Approvals: Process Plan:

DAS
21
9-89

Date: MAR 23 2017

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr

Revision Nbr

D212-664-147

C

100

Document Control

0.00

100

DOCUMENT CONTROL

DC

Memo

0.00

Doc.Control -USB or Paperwork

Photocopy bluefile and create labels as per PPP D212-664-107
CHG 004

110

Packaging

0.00

110

Packaging

Memo

0.00

Packaging

120

BENDING MACHINE - CROSSTUBES

2.24

120

CNC Bend 2

Memo

1.07

CNC Alpha 160 Bender

Bend tube as per Dwg D212-664-107 using CNC bender program 212-107

DPZ 17-03-30

DPZ 17-03-31

Work Order ID 158490

Thursday, March 23, 2017 2:17:30 PM

158490

Page 2

Item ID: D212-664-107

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 4/12/2017 Req'd Qty: 1.00 *1*

Customer:

Reference: SCHEDULED/STOCK

Approvals: Process Plan: Date:

Tooling:

Date:

Run Start

NR1

QC: Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

130

QC15- Crosstube Dimensional Check

0.00

130

QC

Memo

0.00

Quality Control

DAS
38

APR 04 2017

Work Order ID 158490***158490***

Page 3

Thursday, March 23, 2017 2:17:30 PM

Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017 Start Qty: 1.00

1

Cust Item ID:

Required Date: 4/12/2017 Req'd Qty: 1.00

1

Customer:

Reference: SCHEDULED/STOCK

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

140

0.67

140

Crosstubes

Crosstubes

Memo

1.51

***** ENSURE PROPER JIG POSITIONING *****

1-Cut tube as per inspection dwg and deburr ends. ***ensure saw is square***

2-Position cuffs on tube ensure proper positioning

3-Drill tube as per dwg using DT8577 location #7 & # 212 ULF using jig
DT8548 and DT8549 as per QSI 10

4-Transfer drill rivet holes from cuff into tube.

5-Identify cuff position and Batch # on each and identify tube as per dwg D212-
664-107.6- *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***
Inspect surface damage

7- Deburr and realodine cuff.

DPZ 17-04-03

DPZ 17-04-04

Work Order ID 158490***158490***

Page 4

Thursday, March 23, 2017 2:17:30 PM

Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 4/12/2017 Req'd Qty: 1.00 ***1***

Customer:

Reference: SCHEDULED/STOCK

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

150

0.00

150

HandFXtube

Hand Finishing Crosstubes

Memo

0.61

IMMEDIATELY AFTER GRINDING

1- PRESSURE WASH X-TUBE INSIDE AND OUT

2- ALODINE AND ACID ETCH X-TUBE INSIDE AND OUT AS PER QSI005.

*

DR 17-04-04

160

QC7-Inspect Chemical Conversion Coat

0.00

160

QC

Quality Control

Memo

0.00

DAS
38
8-88

APR 04 2017

165

QC5- Inspect part completeness to step on W/O

0.00

165

QC

Quality Control

Memo

0.00

DAS
38
9-88

APR 04 2017

Work Order ID 158490

Thursday, March 23, 2017 2:17:30 PM

158490

Page 5

Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017 Start Qty: 1.00

1

Cust Item ID:

Required Date: 4/12/2017 Req'd Qty: 1.00

1

Customer:

Reference: SCHEDULED/STOCK

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

180

Outsource process - NDT per QSI038 4.1

0.00

180

Outsource2

Memo

120.00

Outsource process - NDT

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

Liquid Penetrant Inspection as per QSI 038Or
Issue P/O: 35235 LPI as per ASTM 1417
Level 2 Attach copy of NDT results to work order

APR 06 2017

DAS
13
9:59

190

0.00

190

Packaging

Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

200

QC5- Inspect part completeness to step on W/O

0.00

200

QC

Memo

0.02

Quality Control

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

Inspect for damage & ensure results are as per Dwg D212-664-107

K SP174-10

Work Order ID 158490***158490***

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Thursday, March 23, 2017 2:17:30 PM

Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 4/12/2017 Req'd Qty: 1.00 ***1***

Customer:

Reference: SCHEDULED/STOCK

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210

0.00

210

Crosstubes

Crosstubes

Crosstubes

Memo

2.26

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

1-Rivet Cuffs as per Dwg D212-664-147. with Sika flex in Between tube & Cuff

A/R SIKAFLEX -241/-291 BATCH: 137127exp 12/17

215

0.00

215

QC

Quality Control

QC5- Inspect part completeness to step on W/O

Memo

0.02

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

DAS
41
9-89

APR 08 2017

DAS
38
9-89
APR 10 2017

Work Order ID 158490

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158490

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Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 4/12/2017 Req'd Qty: 1.00 ***1***

Customer:

Reference: SCHEDULED/STOCK

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

220

0.00

220

SprayPaint

Spray Painting

SprayPaint

Memo

1.30

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

VERIFY BY DAS BATCH # TO MATCH W/O158490 41VERIFY BY 9-89 PART # TO MATCHW/O 158490

MASK SCRIBE B# & P# AND VERIFY

1-Prime inside and outside crosstube as per QSI 005 4.2

PRIMER: 136615Start time: 8:00Finish time: 9:00

2-Paint outside crosstube with White Imron as per QSI 005 4.2

PAINT: 136996Start Time: 100Finish Time: 200DAS
41
9-89

APR 10 2017

Work Order ID 158490

Thursday, March 23, 2017 2:17:30 PM

158490

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Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017 Start Qty: 1.00

1

Cust Item ID:

Required Date: 4/12/2017 Req'd Qty: 1.00

1

Customer:

Reference: SCHEDULED/STOCK

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
---------	--------	-----------	------------	------------	---------------	-------------

230

QC14- Inspect Spray Paint

0.00

230

QC

Memo

0.01

Quality Control

Wrap in plastic bag to protect from scratches

***VERIFY BY _____ BATCH # TO MATCH W/O

***VERIFY BY _____ PART # TO MATCH

W/O _____

Work Order ID 158490

Thursday, March 23, 2017 2:17:30 PM

158490

Page 9

Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017 Start Qty: 1.00

1

Cust Item ID:

Required Date: 4/12/2017 Req'd Qty: 1.00

1

Customer:

Reference: SCHEDULED/STOCK

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

240

0.00

240

Crosstubes

Crosstubes

2.18

Crosstubes

Memo

Assemble as per Dwg D212-664-147

*****LAY DOWN CORSTUBE ON TABLE AND PUT DT10302 PINS IN
SADDLE HOLE FACING UP, USE HOLE IN TAPE MESURE TO PUT IN
PINS FOR LOCATING CENTER OF CROSSTUBE. *****

1- Abrade mating surfaces of support and crosstube with 180 grit sandpaper,
clean the area with MEK or equivalent as per dwg

2- Install supports with Proseal 890 per D212-664-147 and QSI 015

A/R Proseal 890

Batch: _____

EXP: _____

PROSEAL CURE TIME 72 HOURS:

Start: _____

Finish: _____

3- Install clamps with rubber cushion (ENSURE CLAMPS ARE INSTALL ON
TOP SIDE OF CROSSTUBE) as per Dwg D212-664-147.

Torque all clamps to 80-100 IN-LBS.

Work Order ID 158490

Thursday, March 23, 2017 2:17:30 PM

158490

Page 10

Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017 Start Qty: 1.00

1

Cust Item ID:

Required Date: 4/12/2017 Req'd Qty: 1.00

1

Customer:

Reference: SCHEDULED/STOCK

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

250

QC5- Inspect part completeness to step on W/O

0.00

250

QC

Quality Control

Memo

0.02

***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED
FOR 72HOURS AS PER DWG.***

***VERIFY BY _____ BATCH # TO MATCH W/O

***VERIFY BY _____ PART # TO MATCH
W/O _____

255

Pick Kit

0.00

255

Packaging

Packaging

Memo

0.00

Work Order ID 158490

Thursday, March 23, 2017 2:17:30 PM

158490

Page 11

Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 4/12/2017 Req'd Qty: 1.00 ***1***

Customer:

Reference: SCHEDULED/STOCK

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

260

QC4- 100% Inspect kits for completeness

0.00

260

QC

Quality Control

Memo

0.03

***VERIFY BY _____ BATCH # TO MATCH W/O

***VERIFY BY _____ PART # TO MATCH

W/O _____

270

0.00

270

Packaging

Packaging

Packaging

Memo

0.00

Identify and pack for shipping as per PPP D212-664-107
Location : FG093

280

QC21- Final Inspection - Work Order Release

0.00

280

QC

Quality Control

Memo

0.10

Picklist Print

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Page 1

Work Order ID: 158490

158490

Parent Item: D212-664-107

D212-664-107

Parent Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017

Required Date: 4/12/2017

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A New Issue 07.09.12 EC verified by: JLM
IPP Rev:B ECN 1100 08-01-11 DD verified by: EC
IPP Rev:C Ecn 1121 08-02-25 DD Verified by:ec IPP Rev:D
10.05.27 added pick kit DD verf:EC IPP Rev:E 11.10.17
added SEQ 215 DD verf:EC IPP REV:F 11.11.03 as per
chg003 DD verf:EC IPP REV:G 14.05.28 AS PER ECN14-
570 DD VERF ;JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D212-664-107TRN		Manufactured	No	152125		110	Each	1.0000	1				
D212-664-107TRN													
Crosstube Turning Detail													

Location	Loc Qty	Loc Code
LG014	1	
152125	1	

Location	Loc Qty	Loc Code
ST509	6	
152275	6	

Location	Loc Qty	Loc Code
LG052	85	
m136741	85	
ST320	200	
m132344	200	

D3659-1		Manufactured	No	152275		210	Each	6.0000	2				
D3659-1													
Cuff													

CR3212-4-06		Purchased	No			210	Each	285.0000	44	44			
CR3212-4-06													
RIVET													

DAS
41
9-89

APR 08 2017

DPZ 17-03-30

DPZ 17-04-13

44

Picklist Print

Page 2

Thursday, March 23, 2017 2:17:35 PM

Work Order ID: 158490

158490

Parent Item: D212-664-107

D212-664-107

Parent Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017

Required Date: 4/12/2017

Start Qty: 1.00

Required Qty: 1.00

D3595-063-450

Manufactured No

240

Each

47.0000

4

4

D3595-063-450

Rubber Cushion 0.63" wide x 4.50" Long

Location

Loc Qty

Loc Code

FG

15

129907

8

131013

5

88422

2

LG052

32

157945

12

158169

20

MS21920-25

Purchased No

240

Each

81.0000

4

4

MS21920-25

Clamp

Location

Loc Qty

Loc Code

FG

4

120920

2

m134987

2

LG050

77

m136621

2

m136622

25

m136648

25

m136866

25

D2893-1

Manufactured No

240

Each

15.0000

2

2

D2893-1

Support

Location

Loc Qty

Loc Code

FG

1

144785

1

LG050

14

155364

4

157223

10

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Page 2

Picklist Print

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Page 3

Work Order ID: 158490

158490

Parent Item: D212-664-107

D212-664-107

Parent Item Name: Fwd Crosstube - Low Standard

Start Date: 3/27/2017

Required Date: 4/12/2017

Start Qty: 1.00

Required Qty: 1.00

D3428-1

Manufactured No

255

Each

13.0000

1

1

D3428-1

Placard

**

Location

Loc Qty

Loc Code

ST034

13

152358

1

11/8/2017

154443

12

12/23/2017

AN6-35A

Purchased

No

255

Each

37.0000

4

4

AN6-35A

BOLT

**

Location

Loc Qty

Loc Code

ST334

37

m136406

17

m137073

20

AN6-36A

Purchased

No

255

Each

34.0000

4

4

AN6-36A

Bolt

**

Location

Loc Qty

Loc Code

over005

20

M136983

20

ST333

14

M136406

14

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Page 3

Picklist Print

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Page 4

Work Order ID: 158490

Parent Item: D212-664-107

Parent Item Name: Fwd Crosstube - Low Standard

158490

D212-664-107

Start Date: 3/27/2017

Required Date: 4/12/2017

Start Qty: 1.00

Required Qty: 1.00

MS21042L6 Purchased

No

255

Each

165.0000

6

6

MS21042L6

Nut

Location

Loc Qty

Loc Code

ST303

65

m136295

2

m136450

13

m137075

50

ST313

100

m136740

50

m136986

50

NAS1149D0663J

Purchased

No

255

Each

565.0000

18

18

NAS1149D0663J

Washer

Location

Loc Qty

Loc Code

ST260a

500

M136787

500

ST263

65

M136192

65

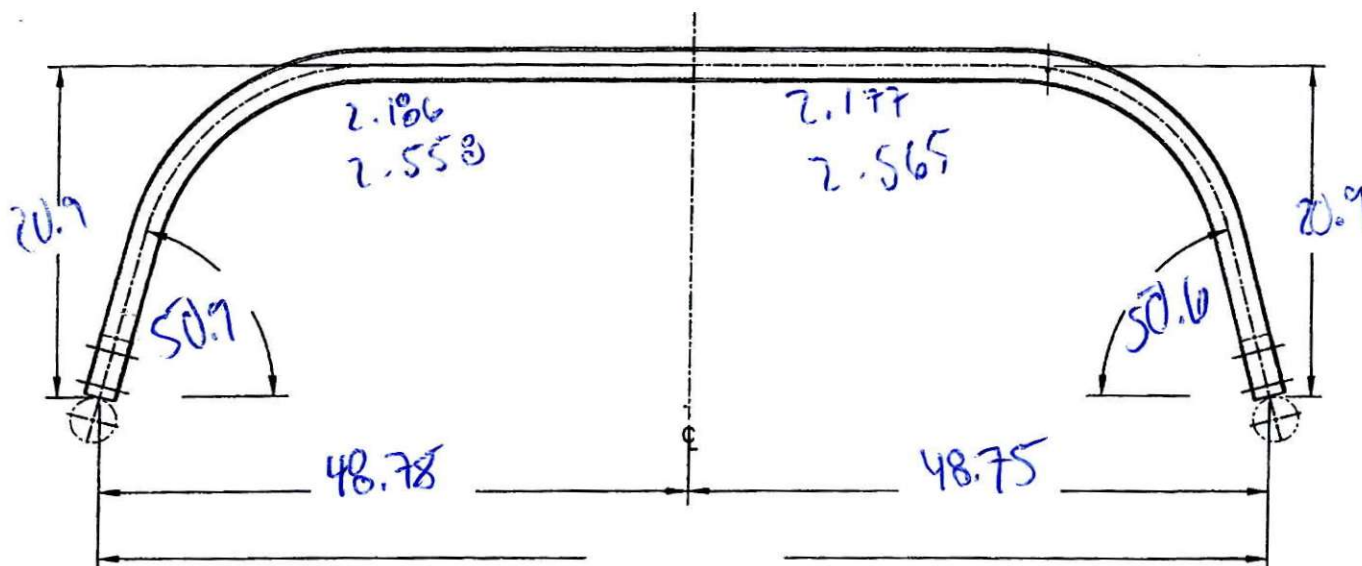
Thursday, March 23, 2017 2:17:35 PM

Shop Packet Print

Page 4

DART AEROSPACE LTD	Work Order: 158490
Description: Crosstube Low Fwd (205/212/412)	Part Number: D212-664-107
Inspection Dwg: D212-664-147 Rev: C	Page 1 of 1

Required Dimension	Min	Max
Height	20.79	21.05
1/2 Span	48.55	48.81
Angle	49	52
Total Span	97.1	97.62
Bending Passes	8	--
Crushing	--	6% / 10%



	Side A	Side B
Bending Passes	7.8	8.2
Crushing	7.8	8.2
Comments		

QC15 Inspection	
Date	APR 04 2017

Rev	Date	Change	Revised by	Approved
A	08.02.29	New Issue	KJ/JM	
B	10.01.21	Dwg Rev updated	KJ	
C	12.04.16	Added bending, crushing dimensions	KJ	
D	14.07.08	Dwg Rev updated	KJ	

Item	Qty -147	Qty -147B	Part Number	Description
1	X		D212-664-147	CROSSTUBE ASSEMBLY (205/212/412 LOW FWD)
2		X	D212-664-147B	CROSSTUBE ASSEMBLY (214 LOW FWD)
3	1	1	D6019-128	CROSSTUBE
4	2		D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	2	2	D3659-1	CUFF
7		2	D5017-1	SUPPORT
8	4	4	MS21920-25	CLAMP (OR MS21920-26)
9	44	44	CR3212-4-06	RIVET (OR M7885/3-4-06)
10	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2
11	A/R	A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6019-128
FINISHED LENGTH = 126.528±0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: D212-664-147/-147B = 24.2 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

MACHINING

- 10) WHEN MACHINING TAPER, RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.

BENDING

- 11) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D., EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.
- 12) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

ASSEMBLY

- 13) INSTALL D3859-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE. SEAL EDGE OF CUFF TO ENSURE NO GAPS.
- 14) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.
- 15) INSTALL D2893-1 / D5017-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 16) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE ON TOP SIDE OF CROSSTUBE.
- 17) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

SHOP COPY
RETURN TO
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UNCONTROLLED COPY
SUBJECT TO AMENDMENT

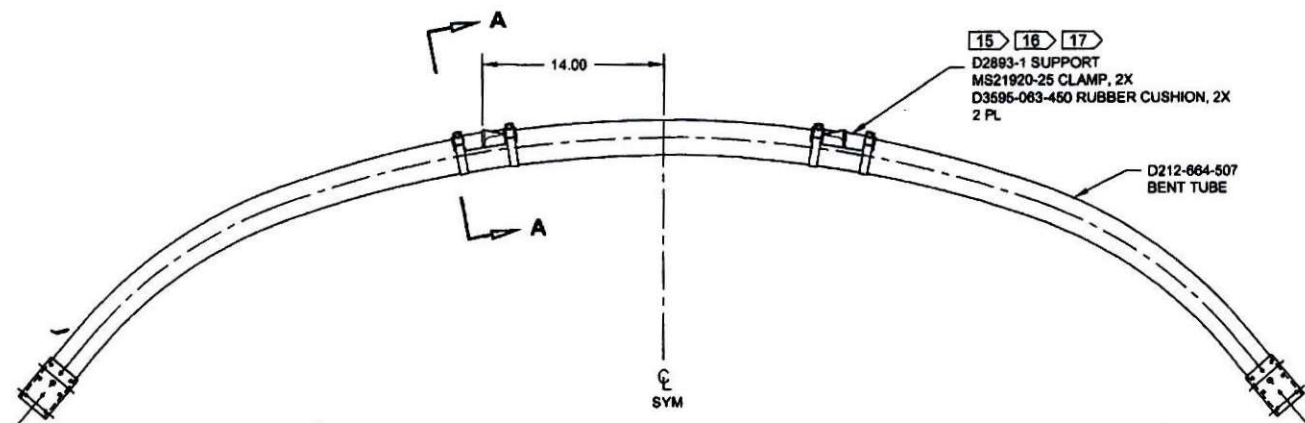
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WORK ORDER

NO. 158490 MWS
1703-23

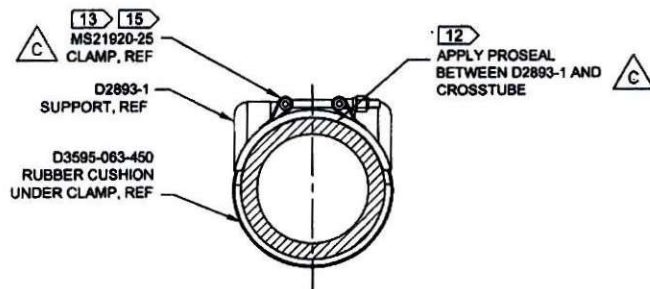
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2014-05-26

C	D5017-1 WAS D2893-1 (-147B), PROSEAL WAS MAGNABOND, ADD SHEET 3, NOTE 18: ADD 72HR CURE & RETORQUE, CLAMPS REVERSED TO PREVENT CHAFING (ZN B7-2, B7-3), INCORP DEO B-1	CP	14.04.01
B	REVISE GENERAL NOTES/PART LIST; UPDATE TO CURRENT STANDARDS; ADD -147B (ZN C4-2, D4-2)	RF	09.09.30
A	NEW ISSUE	CP	07.07.07
REV.	DESCRIPTION	BY	DATE
DESIGN	Q		
DRAWN	Q		
CHECKED	DW		
MFG. APPR.	[Signature]		
APPROVED	[Signature]		
DE APPR.	[Signature]		
DATE	14.04.01		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D212-664-147	REV. C SHEET 1 OF 5
TITLE CROSSTUBE (205/212/412 LOW FWD)	SCALE NTS
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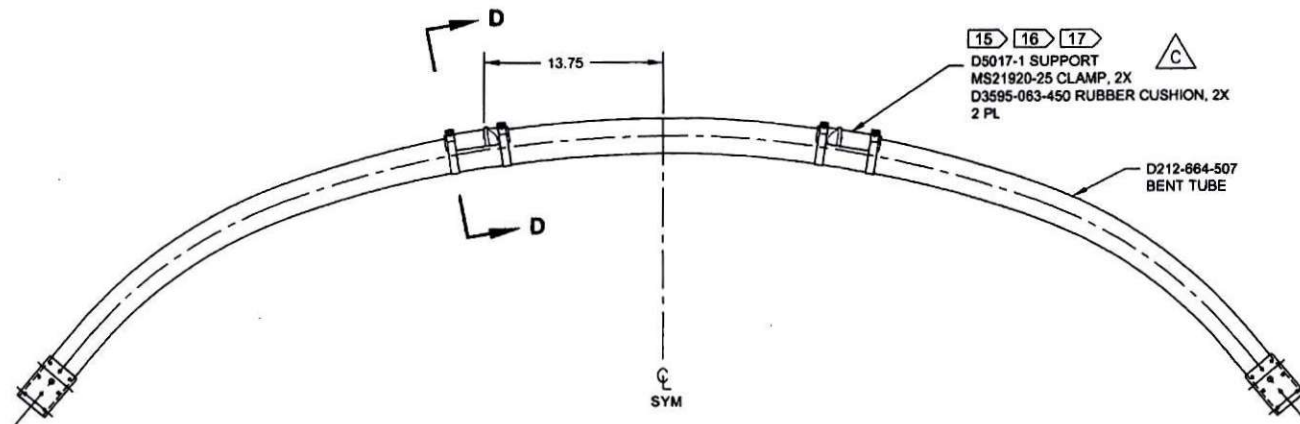
D212-664-147
ASSEMBLY DETAIL



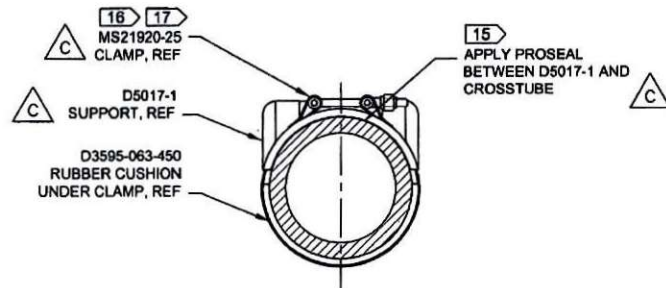
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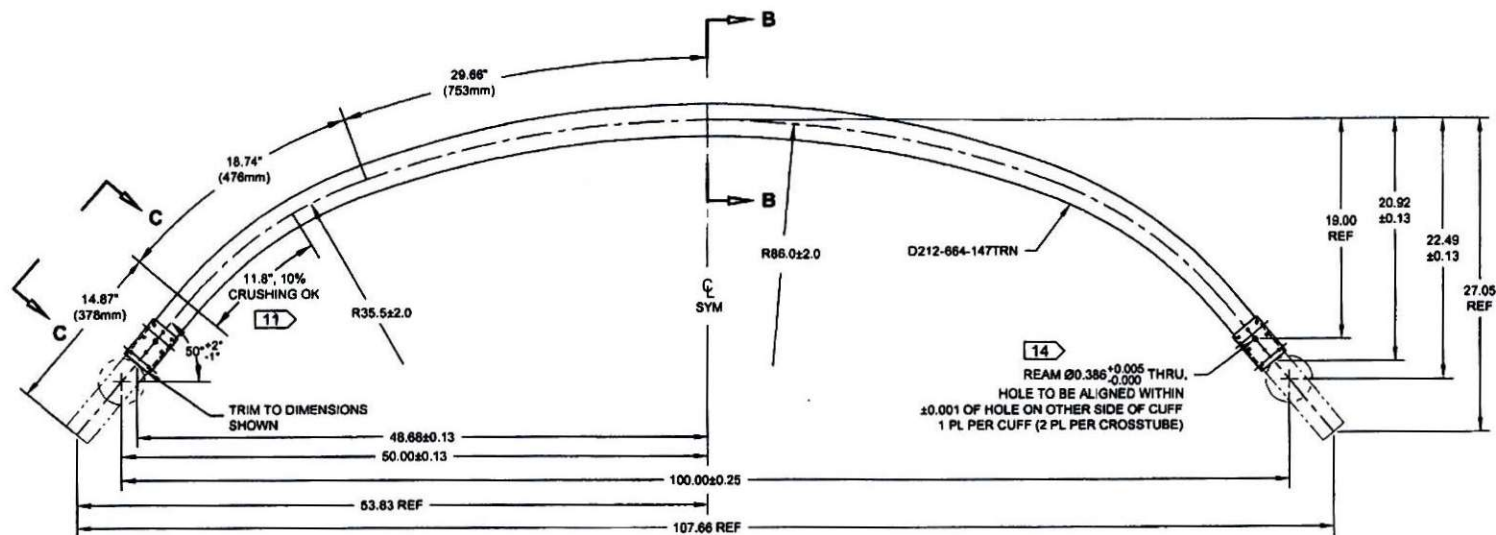
D212-664-147B
ASSEMBLY DETAIL



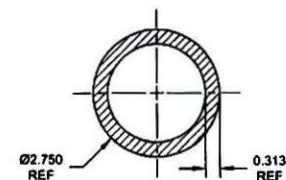
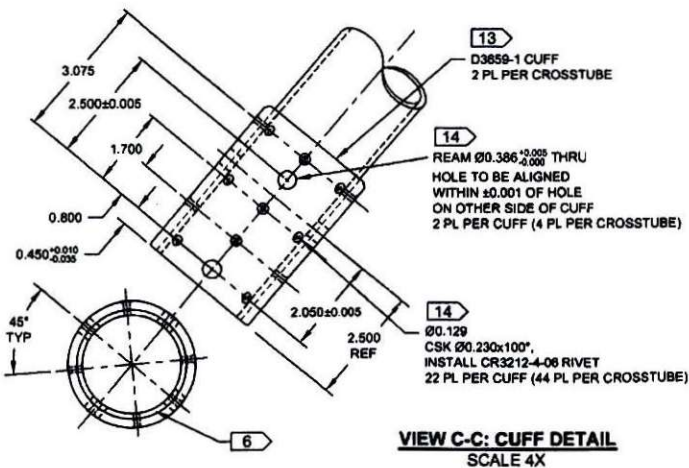
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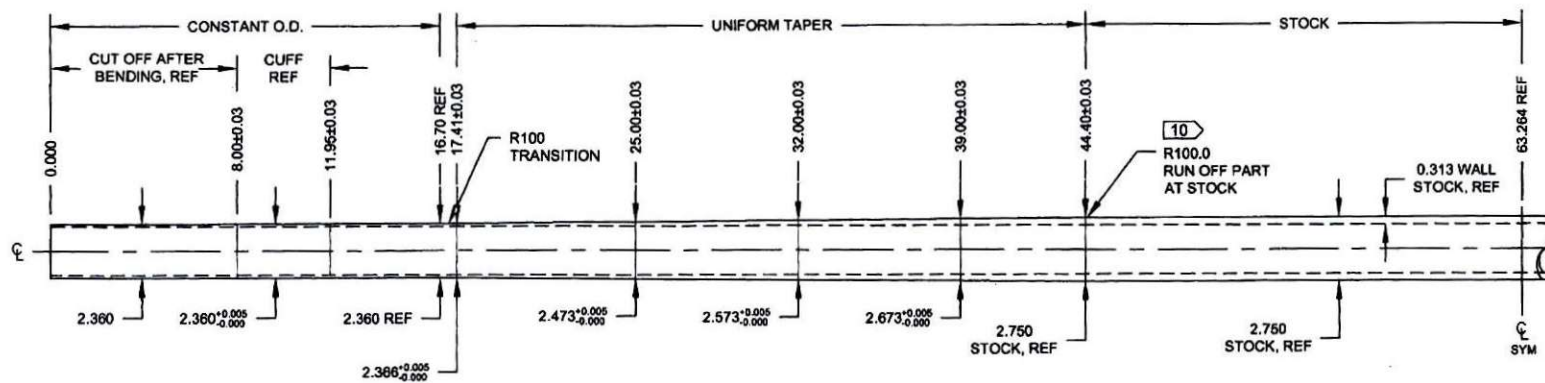
D212-664-507
BENDING AND DRILLING DETAIL 11



SECTION B-B
 SCALE 4X

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MFG. APPR.	9	D212-664-147	SHEET 4 OF 5
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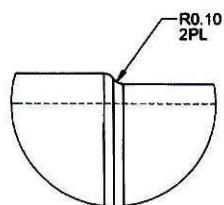


D212-664-147TRN
TURNING DETAIL

RELEA
 2014-05-26
 WND

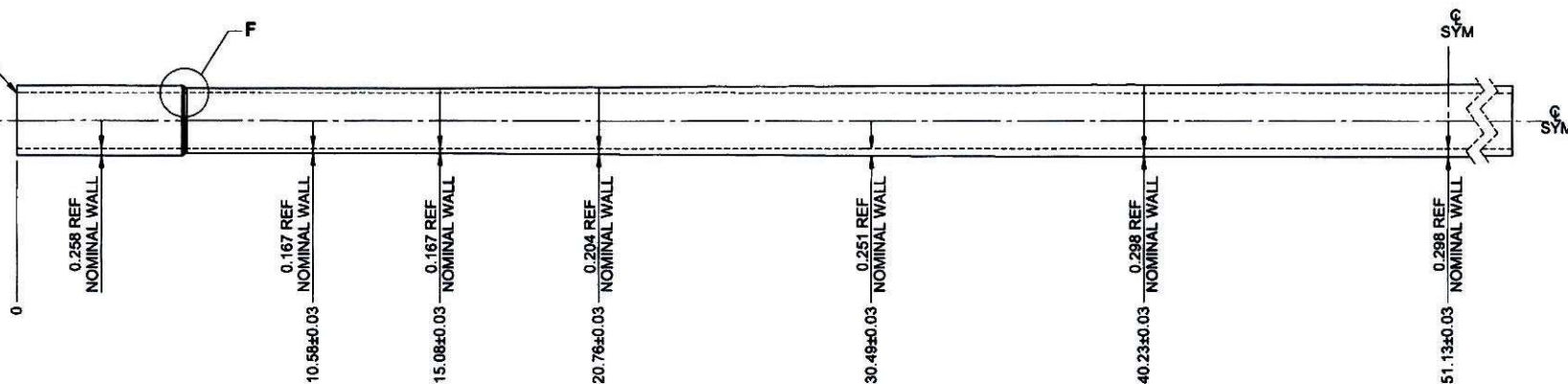
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MFG. APPR.		D212-664-147	SHEET 5 OF 5
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D119-796-141TRN CROSSTUBE, FWD
 SUPPLEMENTAL VIEW: NOMINAL WALL THICKNESS



DETAIL F
 SCALE 2X

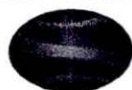
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 FOR TOOLING



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DRAWN	AP		
CHECKED	AJS	DRAWING NO.	REV. H
MFG. APPR.	JLM	D119-796-141	SHEET 6 OF 6
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DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
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skyservice Work Order Traveler

Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO31677	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: PO35835
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT ON 18 PARTS AS PER PO35835

10 END FITTINGS , ITEM ID# D4883-3 , WORK ORDER ID# 158184

2 STRUTS , ITEM ID# D4882-1 , WORK ORDER ID# 158668

2 FWD CROSSTUBES , ITEM ID# D119-796-141 , WORK ORDER ID# 158479, 157378

2 AFT CROSSTUBES , ITEM ID# D119-796-241 , WORK ORDER ID# 158476, 158477

1 FWD CROSSTUBE , ITEM ID# D212-664-107 , WORK ORDER ID# 158490

1 SKID TUBE , RD17-742-01

SP17-410

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417M-13						APR 07 2017	
NO CRACK FOUND							
PEN. ZL-56, MPO13600, CLEANER SKC-S MPO13923 , EMU. MPO15896, DEV. MPO11715 , UV LIGHT M-20142							
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	
		DAS 3R 9-88					

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:	ACA/SCA Stamp	Date:
Name: RAFIK MELIKIAN		APR 07 2017